

# **Welcome to CMSC 19929!**

Creating Computer Games for Learning

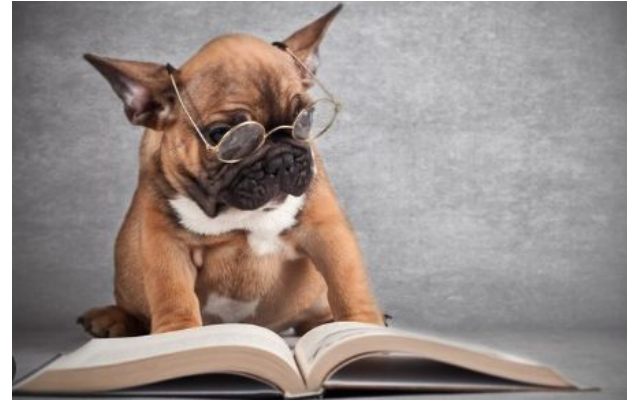
**UChicago Summer Session**

July 2026

# Course Overview

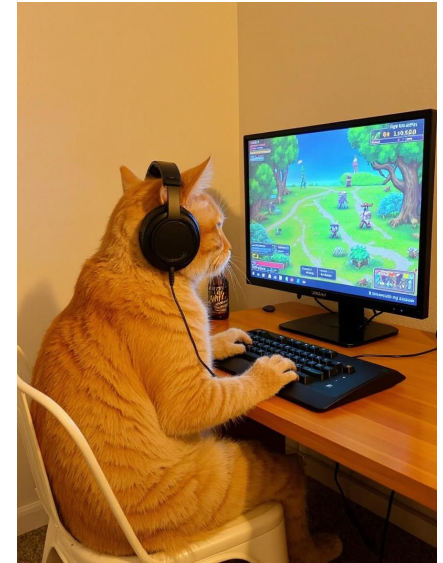
WE will:

- Learn about **learning**
- Learn about **game design**
- Learn to **implement** a computer game



YOU will integrate what you've learned to:

- **Design** a learning game for *all players* with no resource limits
- **Implement** only a *subset* of your game (optional)



# Introduce Yourself!

- Name
- Where you come from
- Why you're taking this class
- What aspects of “Creating Computer Games for Learning” you're interested in exploring
  - e.g., education, design, programming, UChicago :) or anything else...

# Learn about **learning**

- Read about learning theories
- Write reflections connecting readings to your own past learning experiences
- Discuss your reflections during class
- Participate in active learning activities in class

# Learn about **game design**

- Read about game design
- Play some games
- Write reflections on your gameplay experiences
- Discuss your reflections during class
- Participate in active learning activities in class

# Learn to **implement** a computer game

- Explore PyGame - a Python library used for writing 2D video games
- Practice coding with Python during class
- Implement some mini games during class



# Design *your* learning game

You will work in group of 2-3 to:

- Identify some mythical users (not just like you)
- Define the learning content of your game
- Design your learning game (for *all* players with no resource limits)
- Present your final game design in class (twice!)

# Implement *your* learning game

- Implement an MVP for your game (only a *subset* of it!)
- Make a video demonstrating your MVP

Due to the short duration of this course,  
implementing your game will be **optional**!

**You can earn up to 5% extra credit  
if you choose to do this.**

# Structure of Class

Technically, Monday through Friday 9AM – 3PM

*But*, we will follow the following daily structure:

- **Lecture:** 9 – 11:30 AM (Ryerson 255)
- **Lunch break:** 11:30 AM – 12:30 PM
  - I'll stay in the lecture room (Ryerson 255) until 12 PM.
- **Lab:** 12:30 – 3:30 PM (Ryerson 277)



# Class Policy

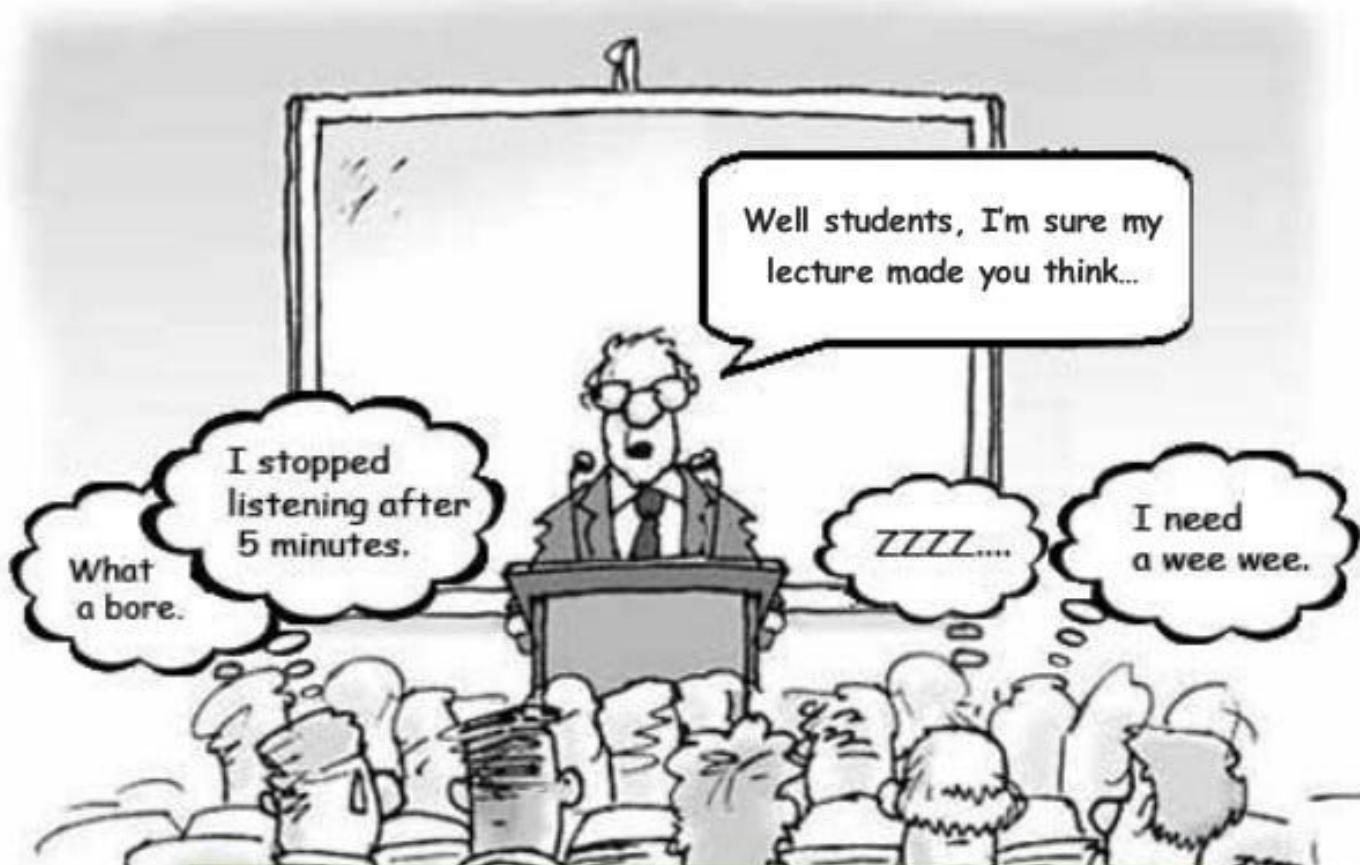
*This is an active learning style class!*

Bring a laptop to every class

- **Lectures:** Laptops are NOT allowed, except for during the in-class participation activities.
- **Labs:** You are free to use laptops!

The first time you volunteer answer a question during class discussion, please say your name at the beginning!

# Why active learning?



# Assessment and Grading Policy

**In-class participation – 20%**

**Individual “homework” – 20% including:**

- Pre-lecture “reading” responses (10%)
- In-lab coding/design exercises (10%)

**Group project – 60% including:**

- Game design milestones – (42%)
- Flash talk (5%)
- Final presentation (10%)
- Peer evaluation (3%)
- **[Extra credit]** MVP implementation (up to 5%)

Two lowest reading / coding scores will be dropped!

# Where to access course materials?

## CMSC 19929 30 (Summer 2026) Create Games for Learning

### Quick Links

- [Course website](#) : Syllabus, course schedule, course materials
- [Gradescope](#) : Assignment submissions
- [Piazza](#) : Announcements, questions, etc.
- ~~[Canvas](#): Non public materials (e.g., coding practice solutions)~~

**Your Canvas will look like this!**  
*(login using your UChicago CNetID)*

Course website URL: <https://minhtran.xyz/teaching/cgl/>

*Let me know (after lecture) if you haven't been added to Gradescope or Piazza!*

# Late Policy

Given the short duration of the course, late work will NOT be accepted.

All assignments are due on the specified date and time listed on Gradescopes. Generally,

- **Project milestones:** Deadlines can be found on the website (highlighted in green or at the bottom of the homepage)
- **Reading responses:** Due before lectures (9AM everyday M-F)
- **In-lab coding practice:** Due at 11:59 PM (same day they are assigned in the lab)

# Late Policy

## **What about emergency situations?**

- Must notify me via email prior to the assignment deadline to discuss your options.
- Documentation may be required.

# Need help with coding exercises?

Your TA (Han) will be holding office hours M-F

- **Time:** After lab until 4:30 PM
- **Location:** John Crerar Library, Common Area 3D



5730 S Ellis Ave, Chicago, IL 60637

Logistical questions?!?

# Group up!



- Groups of 2-3
- Share a **positive** learning experience / educational moment in your life



# Levels of The Golden Rule

TREAT OTHERS THE WAY  
THEY WANT TO  
BE TREATED

DO NOT TAKE  
ADVANTAGE ON  
OTHERS AND DO NOT  
LET OTHERS TO TAKE  
ADVANTAGE OF YOU

-RAMISETTY CHANDANA

**The Golden Rule:**  
**Treat others the**  
**way YOU want to be**  
**treated.**

Why Are People  
So Mean?

# Levels of Design

Design success for  
**many people** unlike you

**Flexibility**

Design success for  
someone **unlike** you

**Listening,  
Empathy**

Design **success** for  
someone like you

**Introspection,  
self awareness**

Design **fail** for  
someone like you

**Lack of self  
awareness**

# Why is sharing important?

**Listening, Empathy, Flexibility**

- **You can learn** from others' learning experiences.
- **Others can learn** from your learning experiences.
- Learning about what didn't work for others helps us **design better**.

# Group up!

- Groups of 2-3
- Revisit this discussion: “Share a **positive** learning experience in your life”, but now...
  - Share a **non-positive** learning experience in your life (only if you’re comfortable to share!)
  - Discuss why you think that learning experience **failed for someone like you**.
  - If you were to redesign it to be more effective, what would you do different? (Trying to aim at the **blue** and **green** level!)

Design success for  
**many people** unlike you

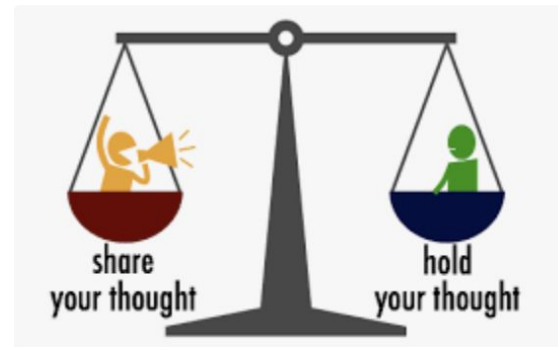
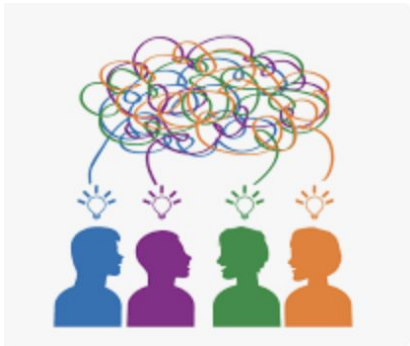
Design success for  
someone **unlike** you

Design **success** for  
someone like you

Design **fail** for  
someone like you

# What is required for sharing?

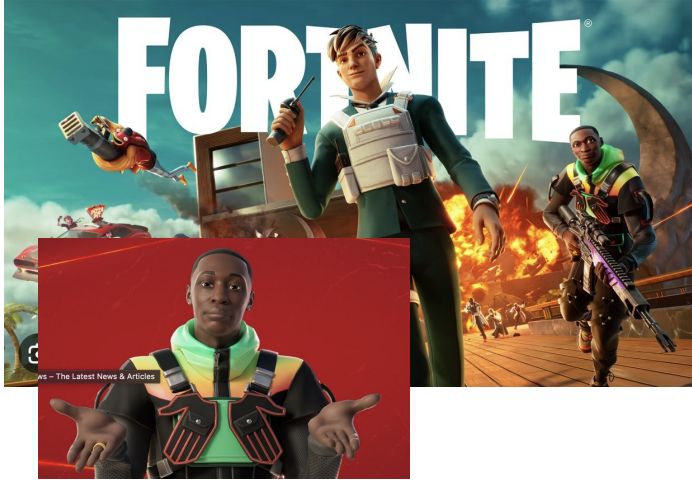
- The entire purpose of sharing is to learn from others **NOT** like you.
  - What is normal to you is not normal to others
  - Struggles, challenges are all a normal part of the learning process
- Respectful exchanges



# Learning / Engagement Spectrum



# Future Prep



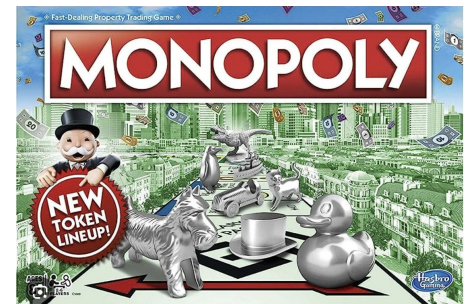
Play or watch videos  
about Fortnite

Complete 5  
DuoLingo lessons

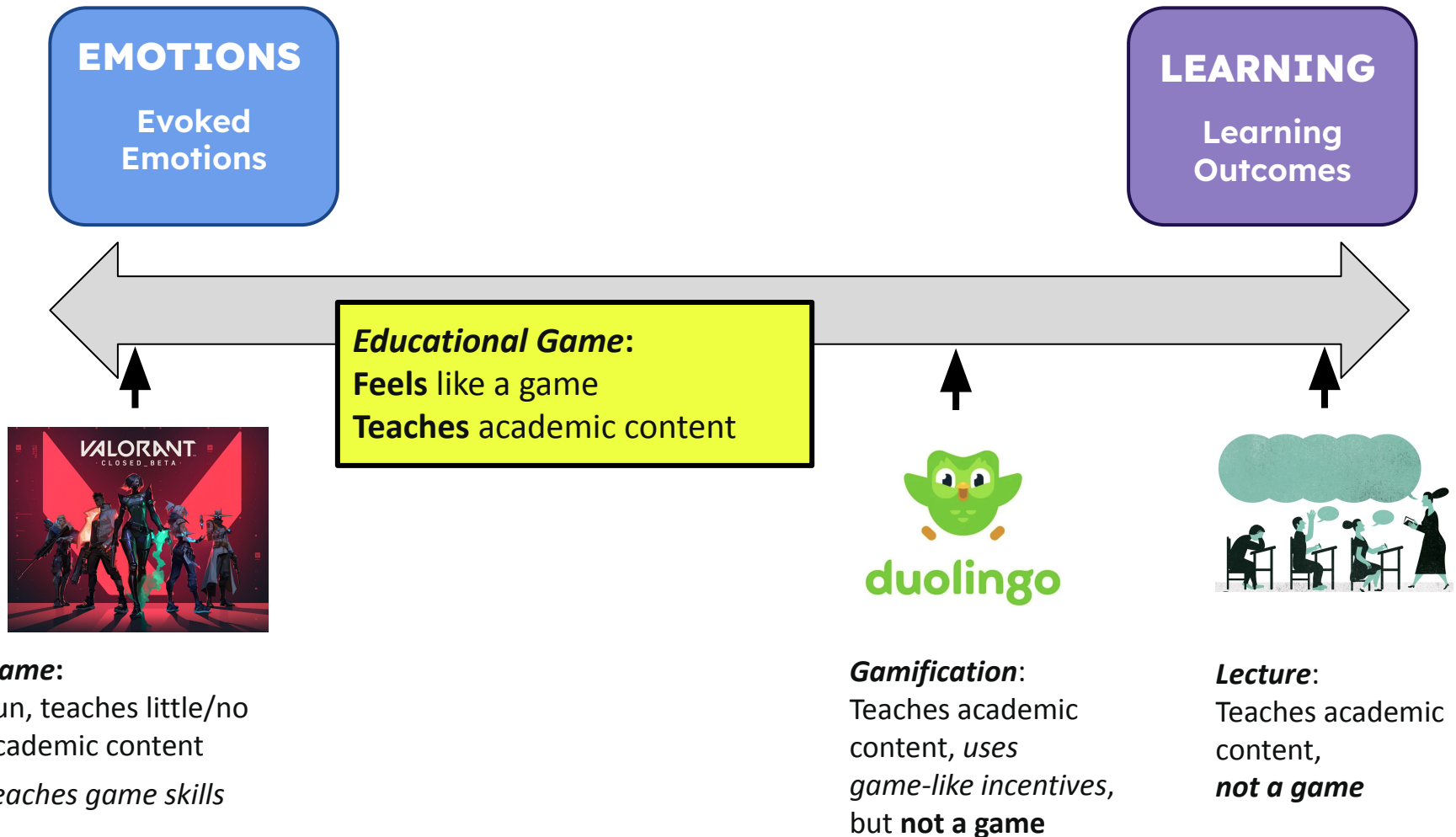


Read about or play one of  
these cozy games

Play Monopoly  
online or board



# Learning / Engagement Spectrum



# Bartok: A Game Design Exercise

- **Bartok is a classic card game that is similar to the commercial game *Uno***
- **All you need to play are three to five players and a standard deck of playing cards**
  - Break into groups of 3-5 players each
  - Remove the Jokers from the deck
  - Shuffle the cards

# Bartok: A Game Design Exercise

## ■ Objective

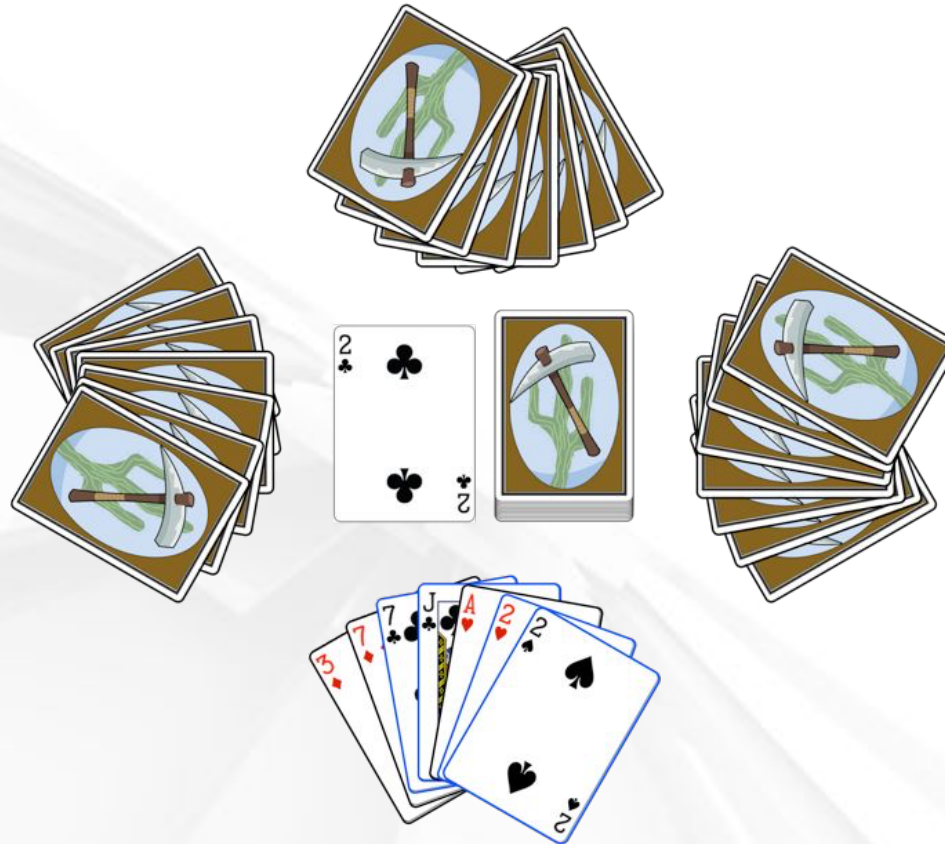
- Be the first person to run out of cards

## ■ Standard Rules:

- Deal 5 cards to each player
  - The remaining cards become a draw pile
- Flip over the top card of the draw pile to start a discard pile
- The person to the left of the dealer plays first, and play proceeds clockwise
- Each player must play a card onto the discard pile that matches the suit or number of the top card of the discard pile.
- If they can't, they must draw a card.

# Bartok: A Game Design Exercise

- Example



The player can choose to play any one of the cards highlighted with blue borders (7C, JC, 2H, 2S).

# Bartok: Asking the Right Questions

## ■ Analysis

- Is the game of the appropriate difficulty?
- Is the outcome of the game based more on strategy or chance?
- Does the game have meaningful, interesting decisions?
- Is the game interesting when it's not your turn?

# Bartok: Modifying the Rules

- Each group should pick a number (1 – 3)
- Based on the number, add the following rule to the game:
  - **Rule 1:** If a player plays a 2, the person to their left must draw two cards instead of playing.
  - **Rule 2:** If any player has a card that matches the number and color (red or black) of the top card, they may announce "Match card!" and play it out of turn. Play then continues with the player to the left of the one who just played the out-of-turn card. This can lead to players having their turns skipped.
  - **Rule 3:** A player must announce "Last card" when they have only one card left. If someone else calls it first, they must draw two cards (bringing the total number of cards to three).

## WATCH OUT FOR PLAYTESTING FLUKES

- **A strange shuffle or other external force can cause one playtest of the game to be very different from others**
- **You must playtest several times to ensure that you experience an average playtest and not a fluke**
- **However, you must also note any flukes that happen because they can also happen to players**

# Bartok: Asking the Right Questions

- **How did the single rule change the game?**
- **Have the answers to your questions changed?**
  - Is the game of the appropriate difficulty?
  - Is the outcome of the game based more on strategy or chance?
  - Does the game have meaningful, interesting decisions?
  - Is the game interesting when it's not your turn?
- **Discuss the changes to these answers for each of the three rules**
- **Changing a single rule can have a drastic effect on the feel of the game!**

# Bartok: Making Your Own Rules

- **Now, how do you *want* the game to feel?**
- **Try designing a rule to make the game feel more like this specific emotion**
  - **Change only one rule at a time**
  - **Test with the new rule and see how it feels**
    - You don't need to complete an entire game if the rule really doesn't feel right
  - **Work with your group to make the game your own**

# Bartok: Discussion

- What game feel was your team seeking?
- What rule(s) did your team create?
- How well did they work?

# Game Definition

- Which definition resonates most with you?
- What elements of different definitions do you like or not like?
- Take one or more and modify to fit *your* definition

# The Definition of Game

"A game is the voluntary attempt to overcome unnecessary obstacles" – Bernard Suits, *The Grasshopper* (1978)

"A game is a series of interesting decisions" – Sid Meier

"A game is a closed, formal system that engages players in a structured conflict and resolves its uncertainty in an unequal outcome" – Tracy Fullerton, *Game Design Workshop* (2008)

"A game is a problem-solving activity, approached with a playful attitude" – Jesse Schell, *The Art of Game Design* (2008)

"A game is a system of rules in which agents compete by making ambiguous, endogenously meaningful decisions"

– Keith Burgun, *Game Design Theory* (2013)

# Bio break (10 min)

**Everyone Thinks About Python :**



**programmers :**



**Coming next: Some Python!!!**